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May 6, 2014

Dr. Patricia M. Dehmer
Acting Director, Office of Science
U. S. Department of Energy
1000 Independence Avenue
Washington, D.C. 20583

Dr. F. Fleming Crim
Assistant Director
Directorate of Mathematical and Physical Sciences
National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230

Dear Drs. Dehmer and Crim:

In a letter from your offices dated December 5, 2013, NSAC was asked to provide guidance to the DOE and NSF regarding an effective strategy for implementing a possible second generation U.S. experiment on neutrino-less double beta decay (NLDBD) capable of reaching a sensitivity necessary to determine whether the nature of the neutrino is Majorana or Dirac. NSAC formed a sub-committee chaired by Dr. Robert McKeown of the Thomas Jefferson National Accelerator Facility to prepare a response to the charge. The subcommittee is a standing subcommittee for an initial period of two years. This subcommittee presented its first report to NSAC at a meeting on April 24-25, 2014 and NSAC accepted it unanimously. A copy of the report is enclosed with this letter.

The subcommittee found that "the pursuit of neutrino-less double beta decay addresses urgent scientific questions of the highest importance, and that sufficiently sensitive second generation experiments would have excellent prospects for a major discovery." They recommend "DOE and NSF support this subject at a level appropriate to ensure a leadership position for the U.S. in this next phase of discovery-caliber research." These are difficult experiments and continued work is needed to resolve issues for dramatic reductions in backgrounds. The subcommittee provided a set of guidelines to be used in the consideration of future proposals and also recommended a focused theory effort to attempt to quantify the theoretical uncertainties.

Sincerely yours,

A handwritten signature in blue ink, appearing to read 'D F Geesaman', with a long horizontal flourish extending to the right.

Donald F. Geesaman
Chair, NSAC